

REMARKS

The Office Action dated 23 March 2005 has been reviewed, and the comments of the U.S. Patent Office have been considered. Claims 19 and 25-27 are currently amended, and claims 1-18 and 20-24 remain as originally filed. Thus, claims 1-27 are submitted for reconsideration.

Before turning to the substantive issues raised by the Office Action, it is noted that paragraph 0016 of Applicant's specification has been amended to correct a typographical error.

With respect to the subject matter of claim 27, the Office Action states that the drawings are objected to under 37 C.F.R. § 1.83(a) as failing to show every feature of the invention specified in the claim, the specification is objected to as failing to provide proper antecedent basis for the claimed subject matter, and the claim is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. These objections and rejection are respectfully traversed in view of the following comments.

Referring to the preferred embodiments that are shown and described at, for example, paragraphs 0032-0033 of Applicant's specification as originally filed, a metering orifice disc 140 includes first and second surfaces 20,40. The first and second surfaces 20,40 are coupled by a first wall 148a that defines a first orifice 148. By virtue of forming a first facet 143a, the first surface 20 is made concave and the second surface 40 is made convex. Therefore, it is respectfully submitted that, as originally filed, the specification, which includes the drawings, and the claims fully comply with 37 C.F.R. § 1.83 and 35 U.S.C. § 112, and that the objections and rejections stated in the Office Action should be withdrawn. Moreover, it is respectfully submitted that the requirement for a replacement drawing sheet(s) in order to comply with 37 C.F.R. § 1.121(d) is in error and should also be withdrawn.

Nevertheless, Applicant has amended paragraph 0033 of the specification to expressly describe a preferred embodiment as having a concave first surface 20 and a convex second surface 40. Support for this amendment may be found at, for example, Figures 2 and 3 of Applicant's drawings as originally filed.

In the Office Action, claims 25-27 were objected to because of informalities and claim 19 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 19 and 25-27 have been amended in accordance with the Examiner's helpful suggestions, and it is respectfully submitted that these objections and rejections should be withdrawn.

Claims 1-26 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,489,065 to Nally, Jr. ("Nally '065"). Claims 1-14, 18, 19 and 21-25 were also rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,484,108 to Nally ("Nally '108"). And claims 15-17, 20, 26 and 27 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nally '108 in view of Nally '065. These rejections are respectfully traversed in view of the following comments.

Applicant's independent claim 1 recites a fuel injector that includes, *inter alia*, "a first facet extending parallel to a first plane," "the first plane being oblique with respect to the base plane," "a first orifice penetrating the first facet" and "the first orifice extending along a first orifice axis, and the first orifice axis being oblique with respect to the first plane" such that "an orientation of the first orifice with respect to the longitudinal axis is defined by a combination of a first relationship of the first plane with respect to the base plane and a second relationship of the first orifice axis with respect to the first plane." Similarly, Applicant's independent claim 8 recites a metering orifice disc that includes, *inter alia*, "an orientation of the first orifice with respect to the longitudinal axis is defined by a combination of a first relationship of the first plane with respect to the base plane and a second relationship of the first orifice axis with respect to the first plane." And Applicant's independent claim 21 recites a method of forming a metering orifice disc for a fuel injector, the method includes, *inter alia*, "forming a first orifice penetrating the member," "the first orifice extending along a first orifice axis oblique with respect to the longitudinal axis," "forming a first facet extending parallel to a first plane" and "the first facet being penetrated by the first orifice, and the first plane being oblique with respect to the base plane." Support for these combinations of features may be found in Applicant's originally filed specification at, for example, paragraph 0035. Specifically, according to a preferred embodiment, the orientation of Applicant's orifice is the additive result of angling the orifice with respect to the facet and angling the facet with respect to a base plane that is orthogonal to a longitudinal axis. This results in a number of advantages that are discussed in Applicant's specification as originally filed at, for example, paragraph 0048.

In contrast, both Nally '065 and Nally '108 are completely silent as to orientating an orifice by combining angling of the orifice relative to a facet with angling of the facet relative to a longitudinal axis. Nally '065 shows through-orifices 48 in a first orifice disk 26a, through-orifices 50 in a second orifice disk 26b and, in the preferred embodiments of Figures 4 and 5,

orifices 54 in a third orifice disk member 26c. However, Nally'065 states that the through-orifices 48,50 may have different areas so as to perform different functions. *See* column 4, lines 30-37. For example, the orifices 48 primarily create turbulence, and the orifices 50 primarily meter and target flow. There is, however, no teaching or suggestion that flow targeting is performed by Applicant's combined angling.

Nally '108 shows through-orifices 52 in walls 54,56,58,60, or in walls 70,72,74, but is completely silent as to angling the through-orifices with respect to the walls. Nally '108 instead states that "[t]he particular shape of indentation 50 [and 50'] is significant" (column 3, line 32). Again, there is no teaching or suggestion that flow targeting is performed by Applicant's combined angling.

Thus, for at least any of the above reasons, it is respectfully submitted that neither Nally '065 nor Nally '108, whether considered individually or in combination, teach or suggest Applicant's combinations of features as recited in independent claims 1, 8 and 21, and therefore the rejections under 35 U.S.C. § 102(b) of these independent claims should be withdrawn, and it is respectfully submitted that claims 1, 8 and 21 are patentable over each of Nally '065 nor Nally '108.

Claims 2-7, 9-20 and 22-27 depend, directly or indirectly, from independent claims 1, 8 and 21, respectively, and therefore recite the same patentable combinations of features, as well as reciting additional features that further distinguish over the applied prior art. Thus, it is respectfully submitted that the rejections under 35 U.S.C. §§ 102(b) and 103(a) of claims 2-7, 9-20 and 22-27 should be withdrawn, and that these claims also are patentable over the applied prior art.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this Application and the prompt allowance of claims 1-27.

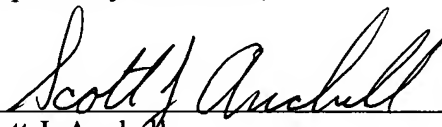
Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact the undersigned to expedite prosecution of the application.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 08-1641. **This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).**

Respectfully submitted,

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